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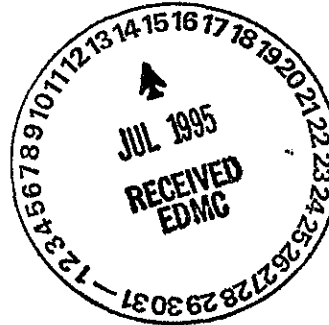
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Mr. Steve M. Alexander
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Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336-6018

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352-0539



Dear Messrs. Alexander and Sherwood:

RESPONSE TO "THE HANFORD CLEANUP COSTS IN PERSPECTIVE: PUMP-AND-TREAT FOR HEXAVALENT CHROMIUM"

In response to the U.S. Environmental Protection Agency (EPA) letter to Mr. K. Michael Thompson from Mr. Laurence E. Gadbois, same subject as above, 41053 dated April 26, 1995, the U.S. Department of Energy, Richland Operations Office (RL), is in total agreement with taking appropriate steps to reduce the cost of remediation at Hanford.

Personnel from RL's Environmental Restoration Contractor (ERC) visited the Boomsnub site in Vancouver, Washington, with Mr. Gadbois, and Mr. W. W. Soper, State of Washington, Department of Ecology (Ecology). The ERC management have briefed RL of their favorable impression of the simplicity of the Boomsnub facility. Steps have already been taken to incorporate some of the applicable concepts identified at Boomsnub, including testing the resin used at Boomsnub. Long-term implementation of other concepts identified during the visit, such as remote operation, are being evaluated for future pump and treat systems.

Enclosed for your information are the general costs for the 100-HR-3 Operable Unit (OU) pump and treat system (HR-3 system) and the Boomsnub system. The costs presented here are somewhat different than those presented in the referenced letter due to the incorporation of additional information obtained from the Boomsnub project, and additional information compiled from the HR-3 system records.

Before comparing the costs and performance of the two systems, it is important to note several key differences between the HR-3 and Boomsnub pump and treat systems:

- The HR-3 system was originally designed to operate for three months as a treatability test in the 100-H Area. The system is now being operated continuously in the 100-D Area. The intended use and expectations of the system have changed over time.

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- The HR-3 system was originally designed to perform a treatability test on groundwater contaminated with chromium and uranium. The system is now being used primarily to treat for chromium. The choice of resins may not be optimal for current conditions at the 100-D Area.
- The Boomsnub facility was originally constructed using reverse osmosis to treat groundwater. When the ion exchange system was installed, the designers had a very good conceptual model including aquifer characteristics, and contaminant levels. The wells, buildings, and other infrastructure were also in place. The conceptual model of the 100-HR-3 groundwater OU is limited.

While these differences lessen the direct comparability of the two projects, there are significant lessons to be learned from observing how other National Priorities List sites that are apart from government facilities are successfully remediating similar contamination problems. Costs associated with the HR-3 and Boomsnub systems are tabulated in enclosures 1 and 2. Enclosure 1 shows the general costs associated with the ion exchange treatment systems, and Enclosure 2 shows monthly operating and maintenance costs.

The Boomsnub general costs are 0.75 cents per gallon of water treated, versus 1.13 cents per gallon for the HR-3 system (estimate based 60 gpm system capacity). As shown on enclosure 2, the current HR-3 system operations and maintenance costs are comparable to the current Boomsnub costs. Earlier this year the HR-3 system operations and maintenance costs were much higher because the system had just been started and had not been automated.

While the Boomsnub costs are generally lower by comparison, the 100-HR-3 treatability test has been a success considering the original test objectives.

The Boomsnub cost analysis demonstrates that significant cost reduction can be achieved when evolving from a treatability test stage to the full scale production stage of aquifer remediation. RL is committed to seeking out the most efficient methods, in terms of cost and schedule, for remediating groundwater.

RL has already initiated an evaluation of the Sybron A-305 resin, the type being used at Boomsnub. The resin has been delivered to the site and will be tested in one of the ion exchange vessels at the HR-3 system. Ecology and EPA will be advised of the results of this test. RL is also committed to using new information derived from Boomsnub and the 100-HR-3 treatability test to better estimate the capital and operating costs for the 100-HR-3 and 100-KR-4 Groundwater OU Focused Feasibility Study Reports.

RL welcomes your initiative and further exchange of ideas for improving the efficiency of environmental remediation activities at Hanford.

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If you want to discuss this matter further or require additional information, please contact Mr. David E. Olson on 376-7326.

Sincerely,



Julie K. Erickson, Director
River Sites Restoration Division

RSD:DEO

Enclosures: As stated

cc w/encls:

R. L. Biggerstaff, BHI

G. R. Eidam, BHI

L. E. Gadbois, EPA

W. W. Soper, Ecology

M. H. Sturges, BHI

PUMP AND TREAT COST COMPARISON

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DESCRIPTION	QUANTITY		DOLLARS/UNIT		MONTHLY TOTALS		COST/GALLON	
	100-HR-3	BOOMSNUB	100-HR-3	BOOMSNUB	100-HR-3	BOOMSNUB	100-HR-3	BOOMSNUB
CAPACITY	60 GPM	100 GPM	--	--	2,630,000 Gal	4,380,000 Gal	--	--
Labor (Operators, Samplers & resin change) Note 1	175 Hrs	100 Hrs	65.00	44.10	\$ 11,375	\$ 4,410	\$ 0.43	\$ 0.10
Engineering (Data Evaluation, etc.)	24 Hours	20 Hours	65.00	67.76	\$ 1,560	\$ 1,355	\$ 0.06	\$ 0.03
Resin/Resin Regeneration	108cf	86cf	130.00	109.00	\$ 14,040	\$ 9,374	\$ 0.53	\$ 0.21
Waste Disposal	Included with Resin	12 barrels	--	250.00	--	\$ 3,000	--	\$ 0.07
Monthly Analyticals	6	19	300.00	200.00	\$ 1,800	\$ 3,800	\$ 0.07	\$ 0.09
Maintenance Labor	16	Occasional no data	45.22	--	\$ 724	--	\$ 0.03	--
Field Screening Equipment	105	Automation	2.00	--	\$ 210	--	\$ 0.01	--
Acids	--	--	--	--	--	\$ 2,800	--	\$ 0.06
Miscellaneous Supplies	--	--	--	--	\$ 100	--	--	--
Water Disposal Cost	None	--	None	--	None	\$ 8,000	--	\$ 0.18
Chromium Removed	.00418 grams/gal	.0927 grams/gal	--	--	11 Kgs	406 Kgs	\$2,709.90 / Kgs	\$80.64 / Kgs
Total	--	--	--	--	\$ 29,809	\$ 32,739	\$ 1.13	\$ 0.75

100-HR-3 Performance (through April 1995)	2,200,000 gallons treated 11 kgs chrome removed	Total O & M: \$426,130
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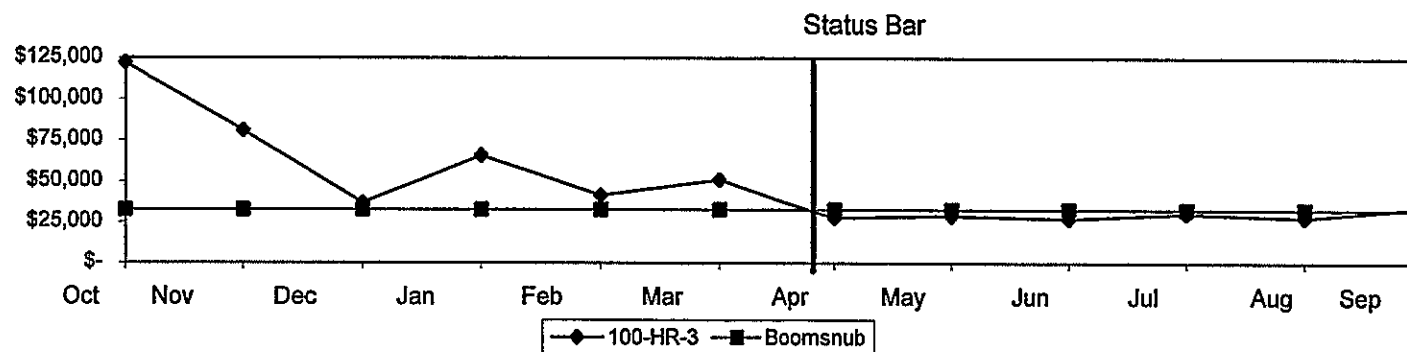
Notes: (1) Due to the remote nature of HR-3, the buddy system has been applied in the past for safety reasons. Based on a recent safety review the system is now operated by one person. Resin change-out still requires two or more technicians. ERC requires trained personnel for sampling.

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MONTHLY O & M COST COMPARISON

FY 1995

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
100-HR-3	\$ 122,000	81,000	37,009	65,667	41,560	50,990	27,904	29,062	27,295	30,364	27,885	34,168	574,904
Boomsnub	\$ 32,739	32,739	32,739	32,739	32,739	32,739	32,739	32,739	32,739	32,739	32,739	32,739	392,868



Note: The system was automated in March.